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Notes on Rosaceae — III

PER AXEL RYDBERG

POTENTILLA

If we were trying to trace the origin of the name *Potentilla*, we should probably find that the name belonged to *Potentilla Anserina* L., or *Argentina Anserina* of the North American Flora. There is no doubt but that very species was the plant usually referred to by the name *Potentilla* among the pre-Linnaean botanists, although other species, as for instance *P. reptans* L., sometimes were meant. As our nomenclature begins with Linnaeus, it concerns us very little, however, what his predecessors named plants. The question that most concerns us is, What application did Linnaeus make of the name *Potentilla*? We know that Linnaeus often adopted names from earlier authors and used them in an entirely different meaning.

As stated before, our nomenclature begins with Linnaeus, and we have agreed to adopt the Species Plantarum of 1753 as the starting point of generic as well as of specific names. As the Species Plantarum does not give any characterization of the genera, and as there are found only a few exceptional cases in which types are assigned, it is necessary to turn to other works of Linnaeus, in order to find his real conception of a certain genus at that time. The best book for this purpose is the fifth edition of his Genera Plantarum, published in the following year. In this we find on page 219 that the genus no. 559, *Potentilla*, was not adopted from anybody else. In other words, whatever the origin of the name *Potentilla* might have been, the concept of the genus originated with Linnaeus himself.* He based it on *Quinquefolium* Tourn. and *Pentaphylloides* Tourn. As *Quinquefolium* is the first of these two synonyms and the only one accompanied by an illustration,† also cited by Linnaeus, we can not help but regard the

*Linnaeus had the same concept even before the publication of the Species Plantarum, for his genus *Potentilla* remained unchanged in his Genera Plantarum from the first edition to the seventeenth, the last one printed during his lifetime.

†Tourn. Inst. pl. 153.

type of *Quinquefolium* Tourn. the type of *Potentilla* L. The plant figured by Tournefort is *Potentilla reptans* L. Tournefort had adopted the name *Quinquefolium* from Caspar Bauhin.* The latter referred directly to the *Pentaphyllum* (πενταφυλλον) of Dioscorides and Theophrastus and Pliny's *Quinquefolium*, all evidently the official plant *Potentilla reptans*. The plate in Dioscorides (Codex Vindobonensis, of which there is a photographic facsimile copy in the library of the New York Botanical Garden) may very well represent *P. reptans*, or at least a species of *Potentilla* with digitately 5-foliolate leaves, 5 petals, and decumbent stem, rooting at the nodes.

A few botanists are inclined to regard the first species mentioned as the type of the genus. The first species of *Potentilla* is *P. fruticosa* L., but this was not a part of Tournefort's *Quinquefolium*. The first Tournefortian species of that genus, cited by Linnaeus, is *P. recta*, and the first Linnaean species given in Tournefort's *Institutiones*, is *P. alba*; but neither of these agrees with Tournefort's plate, nor can they be traced back to the old Greek and Latin writers, from whom Tournefort adopted the name *Quinquefolium*. There is therefore no species which can dispute the right of *P. reptans* as being regarded as the type of *Potentilla*, except *P. Anserina*, and the latter can do so only if we admit a pre-Linnaean starting point of our nomenclature.

The type of *Tormentilla* L.† is *T. erecta* L., or *Potentilla Tormentilla*, a 4-merous species of the same group as *P. reptans*.

The type of *Quinquefolia* (Tourn.) Adans.‡ and of *Pentaphyllum* Gaertn.,§ is of course also *P. reptans*. The proposing of another genus *Callionia* Greene|| was, of course, altogether superfluous, for its type, *Potentilla canadensis* L., is so closely related to *P. reptans* that no scientist would seriously think of placing them in different genera. In proposing *Callionia*, the author says: "If *Argentina* be separated from *Potentilla*, it is by habit and inflorescence alone and from this there seems to follow necessarily the conceding of equal rank to what I shall call *Callionia*."

*Pinax 325.

†Sp. Pl. 500. 1753.

‡Fam. Pl. 2: 295. 1763.

§Fruct. 1: 349. 1788.

||Leaflets 1: 238. 1906.

Even if there were no structural differences in the flowers of *Argentina* and *Potentilla* (which, however, exist), there are not even any essential habitual differences between *P. canadensis*, *P. simplex*, and *P. pumila* on one hand, and *P. reptans*, *P. procumbens*, and *P. Tormentilla* on the other.

Dactylophyllum Spenner* was a merging of *Potentilla*, *Fragaria*, *Sibbaldia*, etc., without any real type.

The types of *Chamaephyton*, *Dynamidium*, and *Hypargyreum* Fourr.† are *Potentilla supina* L., *P. verna* L., and *P. argentea* L., respectively. Fourrier also proposed several other genera, of which *Drymocallis* was adopted by me for *P. rupestris*, *P. glandulosa*, and their allies. The rest of Fourrier's genera are not represented by American species. Whether they should be regarded as distinct genera or not, can be decided only by further study, and was out of the scope of the North American Flora.

The monotype of *Potentillopsis* Opiz is *Potentilla pentandra* Engelm.

Tridophyllum Necker‡ has no type. It was based on the trifoliolate species of *Potentilla* L., of what book of Linnaeus Necker does not state under *Tridophyllum*; but on page 94 we find that he had in mind the 14th edition of the *Systema*. This mattered little, however, in this case, because this division of *Potentilla* remained unchanged from the first edition of the *Species Plantarum* to the 14th edition of the *Systema*, the first and the last of the works of Linnaeus that Necker possibly could have had. The group contained *P. monspeliensis*, *P. norvegica*, *P. nivea*, *P. grandiflora*, and *P. subacaulis*. Only the two first belong to *Tridophyllum*, as modified by Dr. Greene.§ He states: "Among all segregated genera that have been proposed, not one is better entitled to the rank of a genus than Necker's *Tridophyllum*. As its name indicates, it is founded upon species of Linnaean *Potentilla* having trifoliolate leaves. But this mark of the foliage is not one which is considered essential. He makes the generic rank of the group to rest on the very small ovaries, greatly reduced styles and minute naked achenes. The so-called *Potentillas* that

*Fl. Frib. 1084. 1829.

†Ann. Soc. Linn. Lyon II. 16: 371. 1868.

‡Elem. 2: 93. 1790.

§Leaflets 1: 188. 1905.

evinced these characters have other marks more obvious. Their roots are annual, or now and then of biennial duration. All other plants that ever were referred to *Potentilla* are perennial, and very many suffrutescent." So far, Dr. Greene. Let us see of what value these characters are. *Potentilla nivea*, *P. grandiflora*, and *P. subacaulis*, also trifoliolate species of the Linnaean *Potentilla*, and hence part of *Tridophyllum* Necker, do not fulfill this characterization. Some may claim that they did not constitute a part of Necker's genus, but why not? Necker placed the pinnate-leaved species in *Potentilla*, the trifoliolate ones in *Tridophyllum*, and the digitate-leaved ones with more than three leaflets he transferred to *Tormentilla*. In a note under *Tormentilla* he states that 5 species of *Potentilla* are to be referred to *Tridophyllum*; hence the five given above, of which *P. subacaulis* has very long styles and the other two have rather large achenes. They are all three perennials.

But is *Tridophyllum* as modified by Greene a well-defined genus? *Potentilla intermedia* and *P. heterosepala* have both the very short styles and numerous small achenes, and are both included in the SUPINAE group by Dr. Wolf, the world-authority on *Potentilla*; but they are both perennials. The former is very close in habit to *P. monspeliensis*, which occasionally is a short-lived perennial. *Potentilla Newberryi* has all the character of that group, but the style is long. The short style, often glandular at the base, and the numerous small achenes, characteristic of the SUPINAE group, are found in many other *Potentillas*, especially of the MULTIFIDAE group. These characters are worth little as generic characters.

While vol. 25, part 4, of the North American Flora was going through the press, we received at the New York Botanical Garden the excellent monograph of the genus *Potentilla* by Dr. Theodor Wolf.* If this valuable work had reached us a little earlier, some changes and corrections might have been made in my monograph, and quite a number of synonyms could have been added. The monographing of the whole genus, for the whole world, is a stupendous undertaking. Dr. Wolf's work is one of the most elaborate, conscientious, and critical ever published. It is a large

*Bibliotheca Botanica, Heft 71.

quarto of 716 pages and 20 plates, good paper and good large print. The descriptions in Latin are excellent and complete. To these are added elaborate discussions and notes in German. The synonymy is practically complete, and the citations have nothing of the vagueness so characteristic of many so-called monographs.

As one should expect, a comparison of Dr. Wolf's monograph and my treatment of the genus in the North American Flora discloses many differences; but most of these result from our different views. Dr. Wolf is exceedingly conservative both as to genera and species, and the present writer has the reputation of being exceedingly "radical." Dr. Wolf believes in large genera and broad species, and admits numerous varieties and forms; while the writer believes in small genera and narrowly limited species. If the diversity of two plant forms is of any value at all, the writer admits them as distinct species; if the variation is a trifling one, it is simply ignored. In this way the old rank of variety has been disposed of. Of course, also, many of the differences arise from the fact that Dr. Wolf had no or insufficient material of American plants and had to rely upon the printed descriptions alone in many cases.

While Dr. Greene seems to go too far in splitting up the genus, Dr. Wolf is in my opinion too conservative. He has left *Potentilla* with about the same limitation as Lehmann had in 1856, only that he has merged even *Duchesnea* in *Potentilla*. I can not understand why he did not treat *Sibbaldia* in the same way. This genus is really much more related to *Potentilla* than *Drymocallis* and *Dasiphora* are. The only distinctions given by Dr. Wolf are: "Stamens 5 (very seldom 10); carpels 5-15 (the few *Potentillas* with only 5 stamens have always numerous carpels)." But there are several *Potentillas* that have few carpels although they have 10-20 stamens. The distinctions are therefore not well drawn. Of course the position of the style, which I have used as a generically distinctive character, will place it outside of *Potentilla* proper and in the group with *Dasiphora*. Dr. Wolf, however, does not regard this as a generic character and therefore, if consistent, he should have merged *Sibbaldia* into *Potentilla*.

Dr. Wolf has divided the genus *Potentilla* into 2 sections and 6 subsections. These subsections are based on the differentiation

of the styles. It is practically the same character as I used in distinguishing the genera, only that I placed more importance on the position and Dr. Wolf on the form of the style. I also took the stamens into consideration, which Dr. Wolf only incidentally mentions. Dr. Wolf's RHOPALOSTYLAE correspond to my genus *Dasiphora*. His NEMATOSTYLAE correspond to *Sibbaldiopsis* and *Comarum*, together with several groups not American and therefore not treated by me. These two subsections constitute his section POTENTILLAE TRICHOCARPAE. It is evident that *Comarum* (*Potentilla palustris* of his monograph) should not be counted in this section, as the carpels are perfectly naked. He associates *P. palustris*, a herbaceous plant with creeping root-stock and glabrous achenes, with *P. Salesowiana*, a shrub with hairy achenes. While the latter is in its right position in the system, the former is not. I shall discuss this further under the genus *Comarum*. To Dr. Wolf's POTENTILLAE GYMNOCARPAE belong the rest of the subsections. CLOSTEROSTYLAE correspond to the genus *Drymocallis* and LEPTOSTYLAE to *Argentina*. The subsections CONOSTYLAE and GOMPHOSTYLAE show so many intergradations, a fact admitted by Dr. Wolf, that there is no ground, in my opinion, for keeping them apart. They constitute what I have called *Potentilla*. In the main points Dr. Wolf and myself agree, the only difference being that what he calls subsections, I call genera. I can not help, however, but accuse Dr. Wolf of inconsistency, for *Sibbaldia*, *Fragaria*, *Horkelia*, *Comarella*, and *Stellariopsis*, all admitted by Dr. Wolf, are none of them better genera than these subsections.

Now let us take up the different groups of *Potentilla* in the order they are in the North American Flora.

TORMENTILLAE

This contains six species, of which two, *Potentilla reptans* and *P. procumbens*, are introduced. Dr. Wolf admits only one North American species, regarding *P. pumila* and *P. simplex* as varieties of *P. canadensis*. *Potentilla caroliniana* was evidently unknown to him. Regarding *P. pumila*, he states that I regarded it in 1898 as a distinct species but withdrew the rank in 1899 (referring to the Bulletin of the Torrey Botanical Club for that year,

page 25), after Clute had reported *P. canadensis* and *P. pumila* as growing together on the sand barrens of Long Island and were "connected through intermediate forms." The page referred to contains the proceedings of the Club. I had nothing to do with it and my name was not even mentioned. Clute's report on the sand barren flora contains a statement very opposite to what Dr. Wolf gives, viz.: "*Potentilla pumila* and *P. canadensis* growing together without intermediate forms." Robinson and Fernald, who give *Potentilla* a very conservative treatment in Gray's New Manual, keep them distinct, although they regard *P. simplex* a variety of *P. canadensis*. I for some time thought that an additional species could be distinguished from *P. canadensis*, viz., the plant common in the lower Mississippi Valley. This has much thicker and more shining leaves and usually longer bractlets than the common *P. canadensis* of the North Atlantic States, but these characters were found to be too unstable and the plant grades so into the typical form that the idea was given up.

HETEROSEPALAE

This group contains only one species from Mexico and Central America. Dr. Wolf refers it to the SUPINAE group, perhaps rightly so.

SUPINAE

In the North American Flora 12 species are admitted. Of these, *Potentilla rivalis*, *P. millegrana*, *P. biennis*, *P. michoacana* and *P. pentandra* are regarded by Dr. Wolf as distinct species; and *P. paradoxa* and *P. monspeliensis* are regarded as varieties of the European *P. supina* and *P. norvegica* respectively. *P. Nicolletii* is made a mere form (f. *decumbens*) of *P. supina paradoxa*. A comparison between this treatment and the one in Gray's New Manual is rather interesting. In that publication *P. Nicolletii* is regarded as a good species, while *P. millegrana* and *P. pentandra* are made varieties of *P. rivalis*. Whatever may be said, *Potentilla Nicolletii* is a rather weak species, while *P. pentandra* is one of the most distinct in the group. Opiz even based a new genus on the same. It is also interesting to know that the specimen which Sheldon had most in mind when he raised *P. Nicolletii* to specific rank and which he distributed under that name,

was not a specimen of *P. supina Nicolletii* S. Watson or *P. Nicolletii* of my monograph, but of *P. millegrana*.

Dr. Wolf claims that *Potentilla labradorica* Lehm. is but a depauperate form of *P. norvegica hirsuta* (i. e., of *P. monspeliensis*). Lehmann's description, however, suggests another plant, differing from that species not only in the almost complete lack of pubescence but also in the obtuse and oval instead of lanceolate bractlets, the broader obcordate petals and smooth instead of rugulose achenes. It is a subarctic plant and evidently the same as *P. flexuosa* Raf., an older name.

The remaining species, *Potentilla flavovirens*, *P. Kelseyi*, and *P. leurocarpa* were described as new in the North American Flora, and were evidently unknown to Dr. Wolf. They are all three very local. *P. Kelseyi* may be a hybrid between *P. biennis* and *P. monspeliensis*.

ARENICOLAE

This contains only one species, *P. Newberryi*, which Dr. Wolf includes in the preceding group.

ARGENTEAE

This group is a rather artificial one and if I had had Dr. Wolf's monograph at hand when the manuscript was prepared I should have made other arrangements. The group consists of four introduced species. Of these Dr. Wolf has placed *Potentilla intermedia* in the SUPINAE group on account of its short style. It is evidently related to that group and often closely resembles *P. norvegica* but is an evident perennial. Most specimens of this species collected in this country belong to a form with the leaflets more deeply dissected and inclined to be more or less pedately instead of strictly palmately arranged. This form was described as *P. digitato-flabellata*, from seed said to have come from America. Perhaps it is a native and distinct from the European species. I have never seen it growing. It would be worth while for botanists who have the opportunity to see it in the field to give it a thorough study. *P. argentea* is rather common and is found in this country in many forms. I did not take the trouble to try to identify these with the numerous described varieties.

RECTAE

This group contains two closely related introduced species. Dr. Wolf regards them as varieties of one.

HEPTAPHYLLAE

This group consists of a single species, which Dr. Wolf includes in his *Grex Ranunculoides*, a mixture of plants of diverse habits, from the groups *Heptaphyllae*, *Aureae*, *Subviscosae*, *Subcoriaceae* and *Nuttallianae*. In my monograph I had followed S. Watson in calling the species *Potentilla heptaphylla* Mill. It is not closely related to that species. For some years I had known my mistake but did not correct it until I did so in the North American Flora. Dr. Wolf had also noticed it and proposed a new name for the species. As his name is a few months older, the species has to bear the following name and synonymy.

POTENTILLA PALMERI Th. Wolf. *Bibl. Bot.* **16**: 513. 1908

P. heptaphylla S. Wats. *Proc. Am. Acad.* **17**: 353; hyponym. 1882.—Rydb. *Mem. Dep. Bot. Columbia Univ.* **2**: 62. 1898. Not *P. heptaphylla* Mill. 1768.

P. leptophylla Rydb. *N. Am. Fl.* **22**: 310. N 1908.

NUTTALLIANAE

Coulter and Nelson, in the New Manual of Botany of the Central Rocky Mountains, have reduced *Potentilla brunescens* Rydb. to a doubtful synonym of *P. pectinisecta*, to which it has indeed very little relationship. Its nearest relative is without doubt *P. Nuttallii*. Dr. Wolf, who is even more conservative as a rule than the authors of the New Manual, admits it as a distinct species, but changes the name to *P. brunescens*, for what reason I do not know. As far as I know, both *brunneus* and *brunescens* are usually spelled with two *n*'s.

Potentilla Townsendii is placed in the *Ranunculoides* by Dr. Wolf and placed between *P. fragiformis* and *P. Palmeri*; but it is not related at all to either of the two. It has no close relative as far as I know, but must be placed in the group in which I placed it in the North American Flora, unless it is to be regarded as a group by itself.

The only species in North America which resembles it in leaf-form is *P. angustata* Rydberg, proposed as new in the North American Flora, but this is much more closely related to *P. Nuttallii*. It is known only from the type collection.

The new species proposed in this group are *Potentilla angustata*, *P. grosse-serrata*, *P. rectiformis*, *P. amadorensis*, *P. macropetala*, *P. Parishii*, *P. dascia*, and *P. lasia*.

Potentilla grosse-serrata was based partly on material referred by me in my monograph to *P. Blaschkeana*. As treated there, the latter species was composed of a mixture of *P. grosse-serrata*, *P. glomerata* A. Nels., *P. dascia* Rydb., and the true *P. Blaschkeana* Lehm. I shall give a further discussion under the latter species. Some of the more typical specimens of *P. grosse-serrata* are here given:

CALIFORNIA: Donner Lake, 1865, *Torrey 121 (a)*; *Bridges 98*; between Igera and Weed, 1905, *Heller 8092*; (Geological Survey 1860-7) *Rattan 234*.

NEVADA: Ruby Valley, 1868, *S. Watson 339*.

WASHINGTON: *Vasey 322*.

When preparing the manuscript of my original monograph, I had two specimens, rather fragmentary, of *Potentilla rectiformis*. One was doubtfully and hesitatingly referred to *P. recta*, the other to *P. pectinisecta*. The following specimens belong here:

WASHINGTON: Pullman, 1896, *Elmer 29*, "Kuskuske and Fort Vancouver," *Wilkes*.

MONTANA: Spanish Basin, 1897, *Rydberg & Bessey 4379*.

Potentilla amadorensis is known only from the type locality.

Potentilla macropetala resembles much in habit *P. glaucophylla* but has much larger flowers. The stem is also much stouter and the plant much coarser, wherefore it was placed here rather than in the MACULATAE. To this species I refer the following specimens:

CALIFORNIA: Laguna, 1894, *Schoenfeldt 3576*; 1866, *Bolander 5036*; San Diego, *Palmer*.

OREGON: Tillamook, 1894, *Lloyd*.

Potentilla Parishii is closely related to *P. Hallii* and the first specimens seen were referred to that species by me a few years ago, but it differs in the fine appressed instead of spreading and

coarser pubescence of the stem. The following specimens are referred here:

CALIFORNIA: Descanso, 1897, *Parish* 4523; Cuyamaca Lake, 1903, *Abrams* 3871; San Jacinto Mountains, *Hall* 2296; Fresno County, 1900, *Hall & Chandler* 182, in part; Laguna Mountains, San Diego County, 1904, *Brandege*.

Some of the specimens belonging to *Potentilla dascia* were included in *P. Blaschkeana* in my monograph. Later I referred them to *P. glomerata* A. Nelson. It is evidently related to the latter, but differs in the open inflorescence and the pubescence, which is much coarser and not at all tomentose, but slightly puberulent as well as hirsute on the lower surface of the leaves. I refer here:

WASHINGTON: 1889, *Vasey* 320; Ellensburg, 1897, *Piper* 2736; Wilson Creek, 1892, *Lake & Hull* 518; Wilson Creek, 1893, *Sandberg & Leiberg* 315.

OREGON: Dalles, 1869, *Harford & Dunn* 1144.

MONTANA: Bozeman, 1892, *Mrs. Alderson*; 1874, *Coues*.

Potentilla lasia is related to *P. Hallii* but is characterized by the few and large teeth of the leaves and the oblong-lanceolate instead of narrowly linear-lanceolate bractlets. To it are referred:

CALIFORNIA: Schwartout Cañon, San Antonio Mountains, 1899, *Hall*; Bear Valley, San Bernardino Mountains, 1894, *Parish* 3252; Los Angeles County, 1899.

Dr. Wolf reduces *Potentilla Hallii* to a variety of *P. gracilis*, evidently without having seen a specimen. This is not the only case he has treated in that way, for in about half the cases where species have been described by later authors, he has reduced them to varieties of what seemed to him the nearest species. In habit the plant resembles much more what Dr. Wolf describes under the name *P. pulcherrima*, than *P. gracilis*, but it lacks tomentum on the lower surface of the leaves and therefore should be placed near *P. etomentosa* in the *Nuttallianae* group.

Dr. Wolf admits *Potentilla etomentosa* as a valid species, citing specimens from Wyoming. Not all species so named from Wyoming belong to *P. etomentosa*, for some are *P. jucunda*. The latter he reduces to a variety of *P. diversifolia*, claiming that he can scarcely separate it from the variety *glaucophylla*. This

statement he bases on specimens received from me, collected at Chambers Lake, Col. In the Chamber's Lake collection, distributed by the Agricultural College of Colorado and named by me, large specimens of *P. glaucophylla* and rather small ones of *P. jucunda* were mixed. I did not notice this fact when the specimens were sent out and Dr. Wolf may have received specimens of the former instead of the latter.

In the New Manual of the Central Rocky Mountains the author of the name *Potentilla jucunda* has reduced it to a synonym of *P. Nuttallii*, but it differs in the total lack of the glandular pruinosity characteristic of that species, in the thinner leaflets, and less prominent veins.

As an appendage of this group, I added two Mexican species, *P. oaxacana* Rydb. and *P. Goldmani* Painter, with thicker leaves and but 5 leaflets to the basal leaves. They are known only from the type localities.

NEW YORK BOTANICAL GARDEN.